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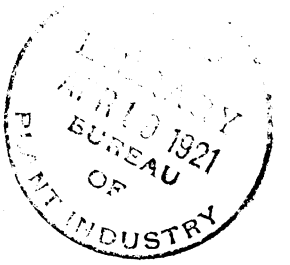

PLANT IMMIGRANTS.

No. 179. MARCH, 1921.

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Foreign Seed and Plant Introduction.

EXPLANATORY NOTE.

This multigraphed circular is largely made up from notes received from agricultural explorers, foreign correspondents, cooperators, and others, relative to the more important plants which have recently been received by the Office of Foreign Seed and Plant Introduction of the Department of Agriculture; in it are also contained accounts of the behavior in America of plants previously introduced. Descriptions appearing here are revised and published later in the Inventory of Seeds and Plants Imported.

Applications from experimenters for plants or seeds described in these pages may be made to this Office at any time. As they are received the requests are placed on file and when the material is ready for the use of experimenters it is sent to those who seem best situated and best prepared to care for it. The plants or seeds here described (except such as are distributed direct or are turned over to specialists in the Department who are working on investigational problems) are propagated at our Plant Introduction Field Stations; and when ready to be distributed are listed in our annual check lists, copies of which are sent to experimenters in the late fall. It is not necessary, however, to await the receipt of these lists should one desire to apply for plants which are described herein.

One of the objects of the Office of Foreign Seed and Plant Introduction is to secure material for plant breeders and experimenters. Every effort will be made to fill specific requests for experimental quantities of new or rare foreign seeds or plants.

David Fairchild
Agricultural Explorer in Charge

Office of Foreign Seed and Plant Introduction,
Bureau of Plant Industry,
U. S. Department of Agriculture.

Issued April 5, 1921. Washington, D.C.

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Citrus grandis (Rutaceae), 52388. **Pummelo**. From Nakorn Chaisri, Siam. Seeds presented by Dr. Yai, of Bangkok, Minister of Agriculture, through Mr. J. F. Rock, agricultural explorer. "'Nakorn Chaisri pummelo.' There are three distinct seasonal crops, and I was told that the crop borne during the rainy season usually produced seeds, while in the other seasons the fruits are seedless. Dr. W. A. Graham, agricultural advisor, says that the occasional formation of seeds is due to pollination by a fly which is apparently absent at other seasons.

"Dr. Yai, who is an expert on pummelos, etc., says that it will be futile to take the Nakorn Chaisri pummelo to America. He says that when plants of this pummelo are brought to and planted in Bangkok, they change their character entirely and become quite a different thing, that the trees, in fact, bear fruits identical with a pummelo long cultivated in Bangkok and known as 'Ban Kun Non.' Dr. Yai thinks that the Nakorn Chaisri pummelo originated from this Ban Kun Non, and that when brought to Bangkok from Nakorn Chaisri, only an hour or so distant by rail, it reverts to the Ban Kun Non. The Nakorn Chaisri pummelo cannot be shipped for various reasons, the main one is that it loses its aroma.

"The citrus fruits differ considerably here: for example, all citrus fruits grown south of Bangkok, i. e., nearer the sea, are far superior to those north of Bangkok. A matter of eight miles or so makes a tremendous difference. Citrus fruits evidently require salt or brackish water. Those grown south of Bangkok are irrigated or inundated by very salty water as the tide carries the ocean water a considerable distance up the Menam river. When planting the Nakorn Chaisri pummelo elsewhere the natives always add salt to the soil.

"North of Bangkok the river water is quite sweet. I tasted Mandarins (choice fruits grown south of Bangkok) and fruits from stock which was derived from the southern garden but grown north of Bangkok, and the difference was tremendous. Those grown south of Bangkok sell six ticals a hundred, while those grown north of Bangkok, although larger than the southern Mandarins, are not comparable in aroma and sell for three ticals per hundred."

Citrus grandis (Rutaceae), 52389. **Pummelo**. From Bangkok, Siam. Seeds presented by Dr. Yai, Minister of

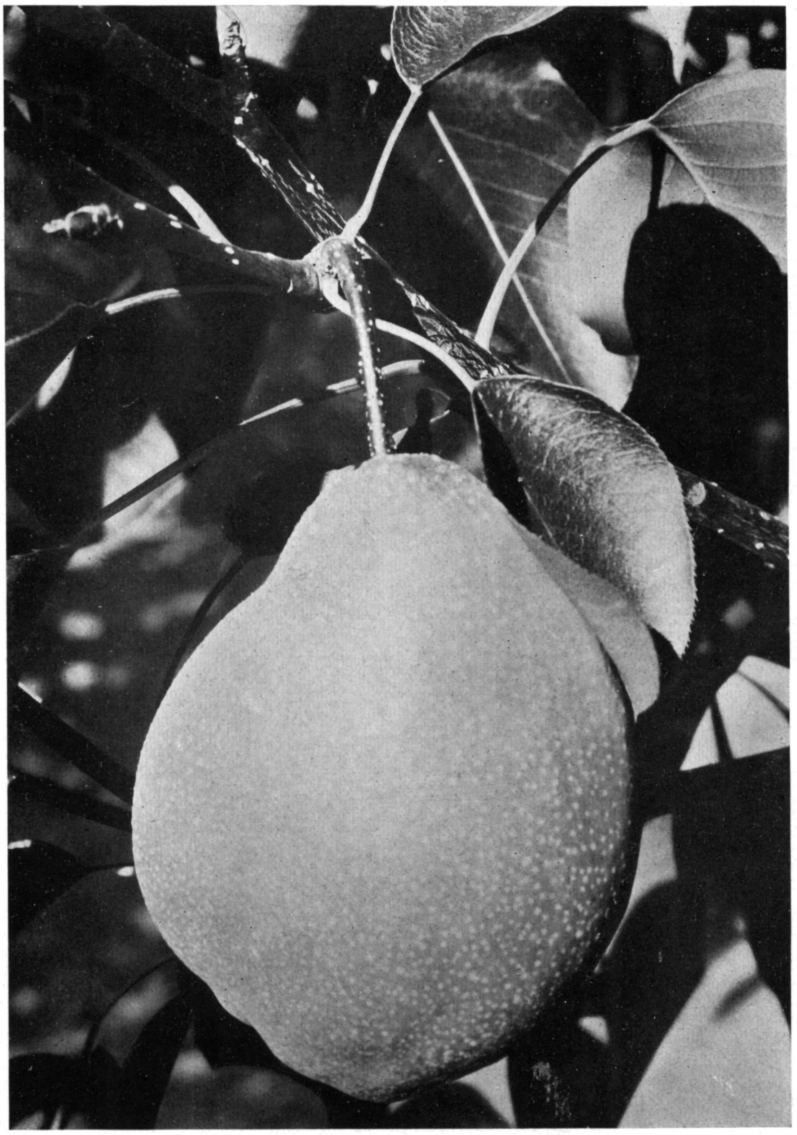
Agriculture, through Mr. J. F. Rock, agricultural explorer. "'Thong Dee pummelo.' Dr. Yai considers this the best pummelo of Siam: it is somewhat acid, and so is better liked than the Nakorn Chaisri which is very sweet; it is a splendid shipper and has quite the aroma of the Nakorn Chaisri. The Thong Dee pummelo does not lose its flavor when planted elsewhere; it often produces seeds but is also seedless at times."

Clematis tangutica obtusiuscula (Ranunculaceae), 52337. **Clematis**. From Cambridge, England. Seeds presented by Mr. F. G. Preston, Botanic Garden. A glaucous-green climbing shrub, native to central Asia, with long-petioled, pinnatisect leaves, 3 to 5 inches long, consisting of lanceolate, coarsely serrate segments up to 2½ inches long, often lobed in one or both sides. The nodding solitary flowers are very large, on erect peduncles 6 inches long and arched at the tip. The ovate-lanceolate, golden-yellow sepals, 2 inches long, are strongly 3-ribbed, glabrous within, the margins tomentose, and with recurved tips. (Adapted from Curtis's Botanical Magazine, pl. 7710.)

Davidsonia pruriens (Cunoniaceae), 52352. From Burringbar, New South Wales. Seeds presented by Mr. B. Harrison. "A palmlike tree with large, long-lobed leaves at the top. The pear-shaped, purple plums are borne on the trunks and even on the roots of the tree if these are exposed above the surface of the ground. The fruit juice makes a good drink for summertime, and could also be used for coloring liquids, etc." (Harrison.)

Elaeocarpus siamensis (Elaeocarpaceae), 52437. From Bangkok, Siam. Seeds collected by Mr. J. F. Rock, agricultural explorer. "A fine ornamental foliage tree, producing seeds in great abundance. The seeds are used as a narcotic by the Lao. The tree will grow well in Florida." (Rock.)

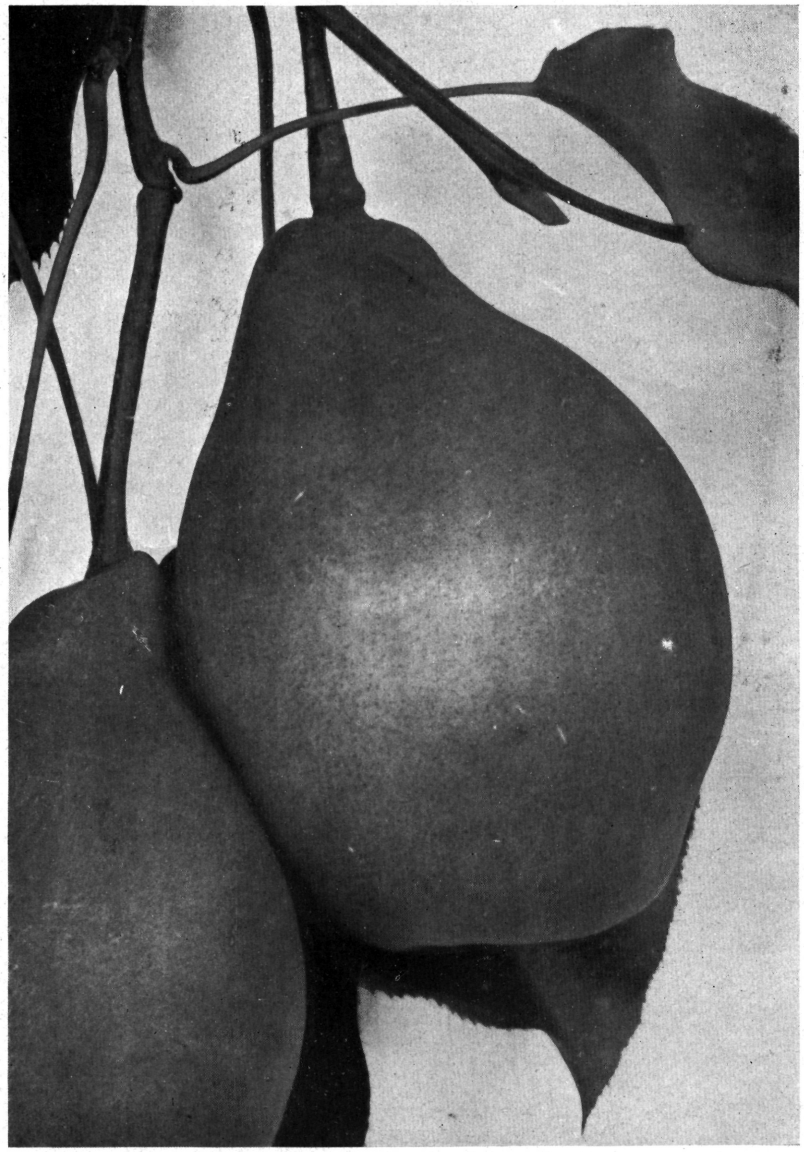
A tree about 9 m. high, with densely puberulent young branches and reddish bark. The lanceolate papery leaves are 7 to 14 cm. long, and 2.6 to 6 cm. wide. The white flowers are in racemes, and have the petals, 5 mm. long and 4 mm. wide, fringed almost to the middle. The tree is found in an evergreen jungle at Chiengmai on Dai Sootep at an altitude of 660 m. Lao name "Mai Moon." (Adapted from Kew Bulletin of Miscellaneous Information, 1911, p. 23.)



THE PIN PEAR.

(*Pyrus chinensis* Lindl., S. P. I. No. 38263.)

The pin (luscious) pear was called to F. N. Meyer's attention in February, 1914, in the village of Wulipu, Honan, China. He never saw the fruit, but was informed that it attains large size and is not a good keeper. Trees of it have just borne at the Chico Plant Introduction Field Station. Unlike the Kieffer and Le Conte pears, the well-known examples of Chinese pears in America, this variety is a good eating pear, being sweet, very juicy, and of melting texture. What its resistance to the blight will prove to be is uncertain. So far it has been blight free. It certainly is worthy of a wide trial in all regions where the oriental pears are grown. (Photographed, natural size, by David Fairchild, Chico, Calif., September 24, 1919; P25653FS.)



THE NANSHI'PT PEAR.

(*Pyrus chinensis* Lindl., S. P. I. No. 30352.)

This extremely juicy, refreshing oriental pear was discovered by F. N. Meyer at Karawag, in Chinese Turkestan, in December, 1910. It is a variety of great vigor of growth, and so far it has shown no signs of the blight. At the Chico Plant Introduction Field Station it has been very productive. Although lacking in sweetness, its remarkable juiciness makes it worth a wide trial in regions where the Kieffer and Le Conte are grown commercially. (Photographed by Peter Bisset, Chico, Calif., September 23, 1919; P25968FS.)

Miscanthus condensatus (Poaceae), 52383. **Grass.** From Yokohama, Japan. Seeds presented by Mr. Iida, manager, Yokohama Nursery Co. "A grass, native to Hachijo Island, of an evergreen (also at the latitude of Tokyo) and tender nature, and with a wider blade and thicker stalk than is found in our common Miscanthus (*M. sinensis*). It is extensively cultivated as fodder; cattle like it better than corn stalks; and the excellent quality of the milk products of the Island is said to be due to this grass." (Iida.)

Oryza sativa (Poaceae), 52439. **Rice.** From Bangkok, Siam. Seeds collected by Mr. J. F. Rock, agricultural explorer. "'Black rice,' much liked as a breakfast food by the Europeans in Chiengmai. When boiled it is deep purple, and has a very fine nutty flavor, quite unlike that of the ordinary rice. It is cultivated exactly like the other rice. The leaves, stalks, etc. are all black, and a field of black rice stands out plainly among the ordinary rice fields. I think that it can be developed as a breakfast food in the States." (Rock.)

Pterocarpus macrocarpus (Fabaceae), 52390. From Korat, Siam. Seeds collected by Mr. J. F. Rock, agricultural explorer. "The 'Mai Padou,' one of the finest timber trees of Korat. It grows to a height of 150 feet with a girth of 10 feet 4 feet above the ground. All the wood, or nearly all, is bought by Japan; it is very hard and splendidly adapted for furniture and also for construction work." (Rock.)

Quercus junghuhnii (Fagaceae), 52440. **Oak.** From Bangkok, Siam. Seeds collected by Mr. J. F. Rock, agricultural explorer. "An oak with edible acorns greatly liked by the Lao people. The acorns are produced in enormous quantities closely packed on long spikes. The acorns must be planted on well-drained slopes, and can stand a dry climate. They would grow well in Southern California and also in Florida. The wood is very valuable." (Rock.)

Rheedia madruno (Clusiaceae), 52301. From Cali, Valle, Colombia. Seeds collected by Wilson Popenoe, agricultural explorer. "No. 528. From the Hacienda Manuelita, near Palmira. This is a common tree, both wild and cultivated, in the Cauca Valley, and a favorite fruit. It occurs at altitudes of 3,000 to 4,000

feet, and probably will not, therefore, be sufficiently frost-resistant for cultivation in California. It may succeed in South Florida, and will, of course, be adapted to tropical regions such as the West Indies.

"The handsome tree, which reaches about 35 feet in height, is commonly pyramidal, and sometimes rather slender. The abundant, dark green leaves are elliptic, and about 6 inches long. The fruits are the size of a small lemon, and about the same color; the rough skin is thick and leathery; the flesh is whitish, translucent, and has an aromatic subacid taste which is very agreeable. The two or three rather large seeds are oblong." (Popenoe.)

Solanum tuberosum (Solanaceae), 52316. From Cali, Valle, Colombia. Tubers collected by Wilson Popenoe, agricultural explorer. "No. 525. 'Papa criolla' (native potato) from the Cali market, the common yellow-fleshed potato of the Andes. This variety produces tubers of small size but of remarkably rich flavor. It is said to be very early, and to be suited to cultivation in a warmer climate than other varieties. The tuber is round, commonly not over 5 inches in diameter, deep rose-colored, with very deep eyes, a very thin skin which peels readily from the boiled tuber, and mealy flesh of rich yellow color and of excellent quality. The variety appears to be worthy of trial in the United States." (Popenoe.)

Telfairia pedata (Cucurbitaceae), 52450. From Nairobi, Kenia. Seeds presented by Mr. S. W. Eells, American consul, through Dr. H. L. Shantz, physiologist in charge of Plant Physiological and Fermentation Investigations, U. S. Department of Agriculture. "A perennial climber, indigenous to eastern Africa, Zanzibar, and Pemba, which grows very luxuriantly and prolifically in this colony. The kernels of the seeds are used by the natives, both as a food stuff and as a source of edible oil.

"The following analysis of the seeds has been published by Gilbert (see Sadebeck, Die Kulturgewächse der Deutschen Kolonien und Ihre Erzeugnisse, Jena, 1899, p. 245):

Moisture	6.54 per cent
Ash	2.04 per cent
Oil	36.02 per cent
Protein	19.63 per cent

Woody fiber	7.30 per cent
Nitrogen-free extractive matter	28.45 per cent

"These seeds are flat, irregularly circular in shape and about 1 1/2 inches in diameter. The single seeds average 4.9 grams in weight. The Imperial Institute reported as follows:

"'The seeds consist approximately of fibrous husk 11 per cent, shell 38 per cent, and kernel 51 per cent.'

"A previous investigator has recorded 7, 33, and 60 per cent of fibrous husk, shell, and kernel respectively. The kernel yields 56.9 per cent of slightly reddish-brown oil."

"The oil from seeds from Zanzibar gave the following analysis:

Specific gravity at 15°C.	0.919
Acid value	2.6
Saponification	196.
Iodine value	89.

"This is a non-drying oil, and has a pleasant, slightly sweet taste. It would be suitable for soap manufacture, and also as an edible oil. The seed is used by Europeans in this colony both as a nut and as a flavoring for cakes.

"The reason that these seeds are not more used is due to the hardness of the shell and the difficulty of removing it, as well as to the intensely bitter, green skin which separates the kernel from the shell. If a method could be found for removing the tough fibrous husks and this bitter skin, it would appear that the seed would be of considerable commercial value, both for its edible oil and for the manufacture of soap, as well as for the resultant oil cake which probably would make a good cattle feed. It would be impossible, however, to use the cake after pressing the unhusked seeds on account of the skin mentioned above.

"A German syndicate of soap and candle manufacturers at Mannheim has investigated the possibilities of these seeds but they expressed the opinion that it would be inadvisable to place consignments of these seeds on the European market until a machine had been invented for rapidly and cheaply shelling them.

"These seeds grow very rapidly in any place which is not touched by frost. The pod containing the seed is about a foot in diameter when ripe. The vine climbs over neighboring trees and requires no care." (Eells.)

"I am rather hopeful that the plant will succeed at Washington, growing as a perennial and dying to the ground each year." (Shantz.)

Notes from Agricultural Explorers in the Field.

Wilson Popenoe writes from Guayaquil, Ecuador, December 18, 1920:

"I have just returned from a three days' trip to see a very remarkable collection of plants some 25 miles from here. It appears that a certain Señor Madinyá developed a magnificent cacao estate called Payo, and when he got established and was receiving a large income, he started a collection of palms and fruit trees. He went to Paris several times, and brought back seeds and plants from Vilmorin Andrieux and Co., and on the way home he evidently stopped in Jamaica and added to his collection by buying a lot of grafted mango trees, etc., at Hope Gardens.

"We found at Payo a great many rare and interesting things. There are a number of oil palms (Elaeis) in bearing, and a lot of rare ornamental plants. There are Peters and Gordon mangos from Jamaica, with the fruit falling on the ground and going to waste; rambutan, in bearing, and what I am sure is a grafted tree of the litchi, several Rheedias, Eugenias, the carambola, and others.

"But the most interesting of all is a group of about ten mangosteen trees, (*Garcinia mangostana*) the ground beneath them covered with dry, hard fruits which have been allowed to rot untouched. These trees are said to be about 15 years old. They range from 10 to 20 feet in height, and all look exceedingly healthy and vigorous. The past crop must have fallen to the ground four or five months ago; and the new crop, which is going to be a good one, is coming on well.

"Nothing I have ever seen has so greatly encouraged me in the belief that we can produce mangosteens commercially in our tropical American dependencies as these trees at Payo. They may have been well cared for the first few years of their existence but they get no care whatever at present,-and still they are in excellent condition and fruiting heavily. They are on level ground about 100 feet distant from a small river, and about 20 feet above the level of the water. The trees never receive any irrigation, yet there has been no rain for about seven months. Doubtless the subsoil is fairly moist, for this region is about 50 feet above sea level. But it seems to me that, once the mangosteen is past its infancy, it is as easy to grow as any other tree."

UNITED STATES DEPARTMENT OF AGRICULTURE
BUREAU OF PLANT INDUSTRY
OFFICE OF FOREIGN SEED AND PLANT INTRODUCTION
WASHINGTON, D. C.

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